CEREAL DISEASE CONTROL PROBLEMS IN 1932

A radio talk by Dr. A. G. Johnson, Bureau of Plant Industry, delivered in the Department of Agriculture period of the National Farm and Home Hour, through WRC and 46 other associate NBC radio stations, Wednesday, March 9, 1932.

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All grain growers know cereal diseases every year cause crop losses running into millions of dollars. In one Nebraska county plant disease specialists recently counted up the losses caused by stinking smut of wheat. They found that the average loss per farm in this county from this one disease alone slightly exceeded the average annual taxes per farm. The disease bacterial wilt wiped out entire fields of sweet corn in one State last summer. In one case reported to us, a 300-acre field of sweet corn was practically a total loss. Oat smut was abundant in some sections and barley smut in others last year.

These losses and the thousands of others caused by cereal diseases could have been largely prevented at low costs. To control any disease intelligently, it is necessary to understand its cause and to know the conditions that favor or hinder its development. This is particularly true for cereal diseases. It is also necessary to know what conditions are favorable or unfavorable for the grain in question. For example, you can control stripe disease of barley, which is important in some sections, by delaying spring sowing until the soil is thoroughly warmed up. However, if this is done, low yields usually will result because the barley seedling likes cool soil.

In general, it is necessary to plan far in advance in order to control cereal diseases. For example, scarcely anything can be done now to control diseases, that are developing or may develop on grains sown last fall. But much can be done to control certain diseases of grains to be sown this spring. I'm going to mention to you control measures known for the more important diseases of spring-sown grains.

The most important wheat diseases are:

Stinking smut or bunt
Rusts
Foot rots and
Scab

Stinking smut of wheat is caused by each of two fungi the "seeds" or spores of which are carried chiefly on the seed. These fungous parasites are very widely distributed. So it is good insurance to clean the seed wheat thoroughly and then to disinfect it before sowing. In recent years the use of copper carbonate dust, manufactured for the purpose, has proved most advantageous for disinfecting seed wheat. Two of our publications describe this disinfection process and give precautions to take in applying it. They are U. S. Department of Agriculture Circular 182 and Miscellaneous Circular 108.

There are three rusts of wheat, stem rust, leaf rust and stripe rust.

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which occurs only in the West, and leaf rust, which is general, are controlled only by the use of resistant varieties. The respective State Agricultural Experiment Stations or the U. S. Department of Agriculture can give growers information regarding such varieties. The development of the numerous strains of stem rust is greatly favored by moist and warm weather conditions during the summer, especially during May, June and July. Of course, we can not control weather conditions, but we can grow the more resistant varieties. Further, this rust develops its spring stage on the common barberry bush, and from it spreads to the grains. That is why farmers are urged to eradicate this shrub wherever possible. These problems are discussed in Farmers' Bulletin 1544 and Miscellaneous Publication 131, as well as in bulletins from several State Agricultural Experiment Stations. This applies likewise to stem rust of oats, barley and rye.

Wheat foot rots also are important in some areas. The principal control known at present consists of sowing spring wheat as early as possible in the spring and sowing winter wheat as late in the fall as it is safe.

Scab of wheat and barley is important in some sections, particularly in years when there is moist weather during and immediately following the blossoming period of these grains. You can get information on this disease and its control from Farmers' Bulletin 1599.

Barley covered smut and stripe disease may be readily controlled by thoroughly cleaning the seed and treating it with a special mercury compound sold on the market as "Ceresan."

Oats, in addition to being attacked by stem rust, as I have said, is attacked by crown rust, which attacks chiefly the leaves. This rust carries its spring stage on the buckthorn shrub. Some varieties of oats are fairly resistant to this rust and also resistant to stem rust. You can get lists of resistant varieties from your State Agricultural Experiment Stations or from the U. S. Department of Agriculture.

There are two smuts of oats, loose smut and covered smut. Disinfecting the seed with formaldehyde readily controls both. This seed treatment is described with some variations in bulletins from the State Agricultural Experiment Stations and in Miscellaneous Publication No. 21.

A number of diseases attack corn. These are discussed in a cooperative bulletin published by the Illinois Agricultural Experiment Station as Bulletin 354. Information on chemical-dust seed treatments for corn are given in Circular 34. These seed treatments for corn, however, apply chiefly to the more humid areas of the Corn Belt.

Sorghum kernel smuts are destructive in some areas and they may be controlled by treating the seed with copper carbonate as described for stinking smut of wheat in Miscellaneous Circular 108.

The principal disease of flax is the soil-borne disease known as "wilt." Growers in the States where this disease is important may obtain lists of the best-adapted resistant varieties from their State Agricultural Experiment Stations.

Controlling the grain diseases I think is sound business. It makes for economical production. It decreases crop hazards. The cost of seed treatment is from 2 to 5 cents per acre for chemicals, plus the labor of applying the chemicals. This expenditure of money and work is good insurance against a loss that may run from nothing at all up to half or even more of the crop. If the loss would have been nil even had you not treated, you at least have the comfort of confidence in the crop's safety during the growing season. If the loss would have been half or more of the crop had you not treated, you get big returns on the investment.

Controlling grain diseases does not necessarily mean increased production. It does mean production at less cost per bushel. That sort of production is imperative this year.

Cereal disease control, it seems to me, tends to sustain faith and increase courage of grain growers. Control of cereal diseases, along with similar pest control activities, strengthens the morale of growers and thus helps in these reconstruction days.